IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): **B. Gibson et al.**

Application No: **10/766,430**

Filing Date: **January 28, 2004**

Attorney Docket No: **H0003690**

Title: **EXTRUDABLE PVC COMPOSITIONS**

Art Group: **1713**

Examiner: **W.K. Cheung**

Mail Stop: Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attn: Board of Patent Appeals and Interferences

REPLY TO NOTICE OF NON-COMPLIANT APPEAL BRIEF

Sir:

This is in reply to the Notice of Non-Compliant Appeal Brief mailed November 19, 2007, having a one-month period for reply set to expire December 19, 2007.

In response to this Notice, appellant is filing herewith an amended brief that is a complete new brief including the status of all claims, a concise statement of each ground of rejection presented for review, and the signature of the practitioner submitting the brief.

1. REAL PARTY IN INTEREST

The present application has been assigned to Honeywell International, Inc., having its principle place of business at 101 Columbia Road, Morris Township, New Jersey. Accordingly, Honeywell International, Inc. is the real party in interest.

2. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

3. STATUS OF CLAIMS

A. Claims cancelled: 19 – 66 and 68 – 70

B. Claims withdrawn from consideration, but not cancelled: None

C. Claims pending: 1 – 18, 67 and 71 - 85

D. Claims allowed: None

E. Claims rejected: 1 – 18, 67 and 71 - 85

F. Claims appealed: 1 – 18, 67 and 71 - 85

Appealed claims 1 – 18, 67 and 71 – 85, as currently pending, are attached hereto as the Claims Appendix.

4. STATUS OF AMENDMENTS

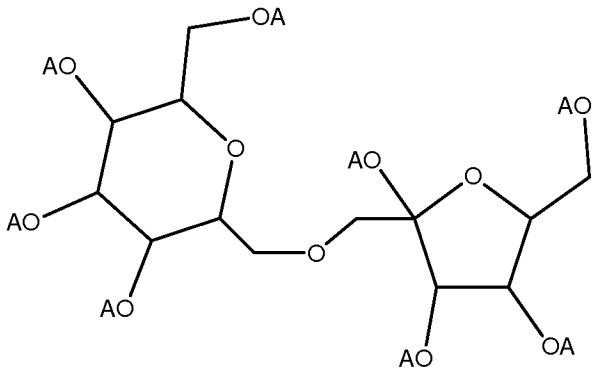
No amendments are currently pending.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

The independent claims argued in the present brief, as having an independent basis for allowance, are directed to extrusion processes.

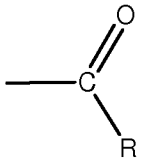
The first independent claim – Claim 1 – recites a process for extruding a resin containing composition (*page 4, ¶ 11*) by providing an extrudable mass comprising at least one extrudable resin and at least one saccharide ester (*page 5, ¶ 12*). The saccharide ester is specified in the claim as being in accordance with Formula I (*pages 14 -15, ¶ 36*):

I



According to the claims, each "A" in the Formula (I) structure is independently hydrogen or has the structure of Structure I (*page 15, ¶ 37*):

Structure I:

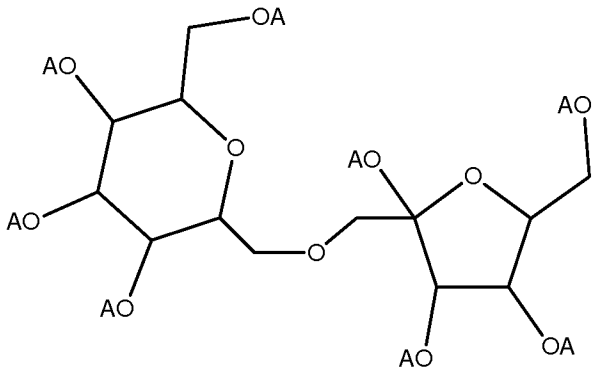


wherein each "R" is independently an aliphatic or aromatic moiety of about eight to about 40 carbon atoms (*page 15, ¶ 39*). Important to patentability of independent Claim 1 is the requirement that all of the "A" moieties of at least about 50 wt. % of the compounds of Formula I comprise moieties of Structure I (*page 18, ¶ 47*). This feature is not disclosed or suggested in any item of cited art, and this feature contributes to the unexpectedly superior results of the process. The claim finally requires extruding the extrudable mass to produce

an extrudate (*page 5, ¶ 13*).

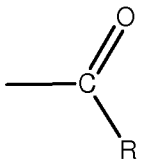
The second independent claim – Claim 67 – is also directed to a process for extruding a composition (*page 4, ¶ 11*) by providing an extrudable mass comprising at least one extrudable resin and at least one saccharide ester (*page 5, ¶ 12*). The saccharide ester is specified in the claim as being in accordance with Formula I (*pages 14 -15, ¶ 36*):

I



Each "A" in the Formula (I) structure is independently hydrogen or has the structure of Structure I (*page 15, ¶ 37*):

Structure I:



wherein each "R" is independently an aliphatic or aromatic moiety of about eight to about 40 carbon atoms (*page 15, ¶ 39*). As with Claim 1, this claim also includes the important requirement that all of the "A" moieties of at least about 50 wt. % of the compounds of Formula I comprise moieties of Structure I (*page 18, ¶ 47*). In addition, Claim 67 also requires at least one additional constituent selected from the group consisting of supplemental lubricants, supplemental heat stabilizers and combinations of these (*page 23, ¶ 58*). Finally, the claim requires extruding the extrudable composition to produce an extrudate (*page 5, ¶ 13*).

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

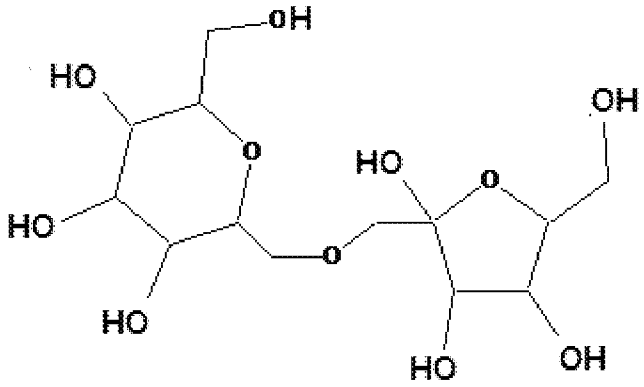
Applicants request that the Board review the rejection of the claims as being anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 3,635,856 to Kaneko et al. (hereinafter "Kaneko") "as affirmed by" Mitsubishi-Kagaku internet publication http://www.mfc.co.jp/english/index.html entitled "Introduction of Sugar Esters" and having a copyright date of 2002 (hereinafter "Mitsubishi").

7. ARGUMENTS

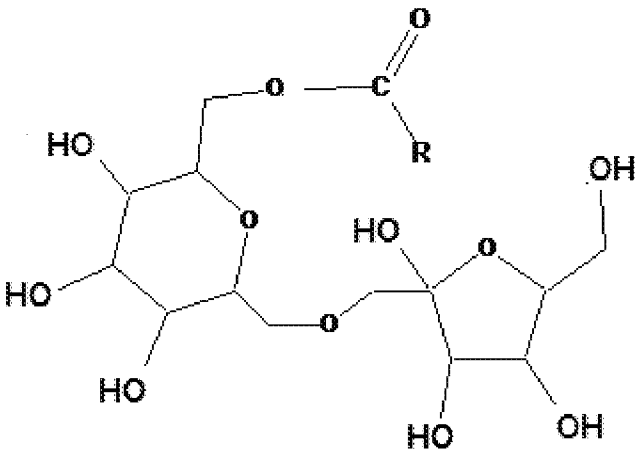
A. Summary of the Invention

The invention as defined in claims 1 and 67 requires a process for extruding a resin-containing composition. The processes comprise the step of providing an extrudable mass comprising two components: (i) at least one extrudable resin; and (2) at least one saccharide ester of Formula I. The first component of the extrudable mass, namely the extrudable resin, is not further limited by claim 1. The second required component of the extrudable mass, namely the compounds of Formula I, is limited in an important and unobvious way, as explained in detail below.

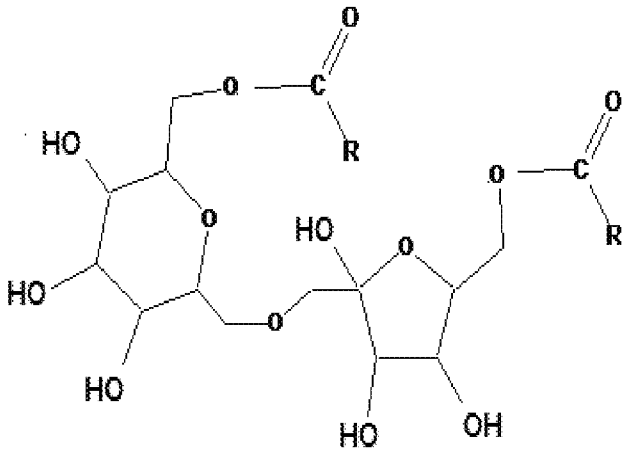
If the compounds of Formula I were not further limited, they could be unsubstituted at all eight "A" locations, that is, an H would be present at each "A" location, or the compound could be substituted at any one or more of the eight (8) locations represented by the designation "A." Thus, broadly speaking, nine possible sub-genus of compounds are possible. An example of one compound within each sub-genus is identified below:



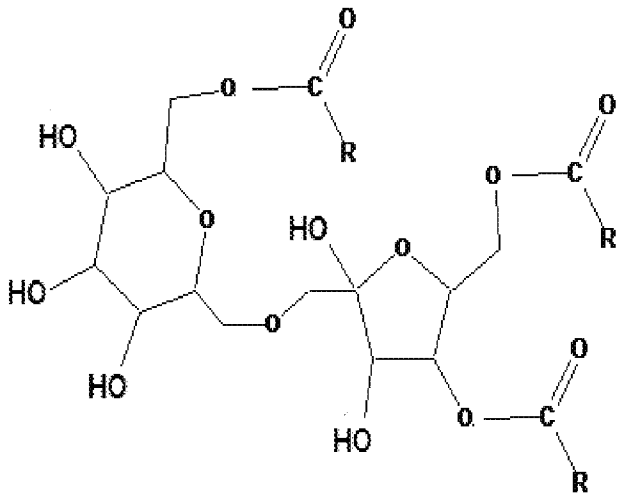
Unsubstituted



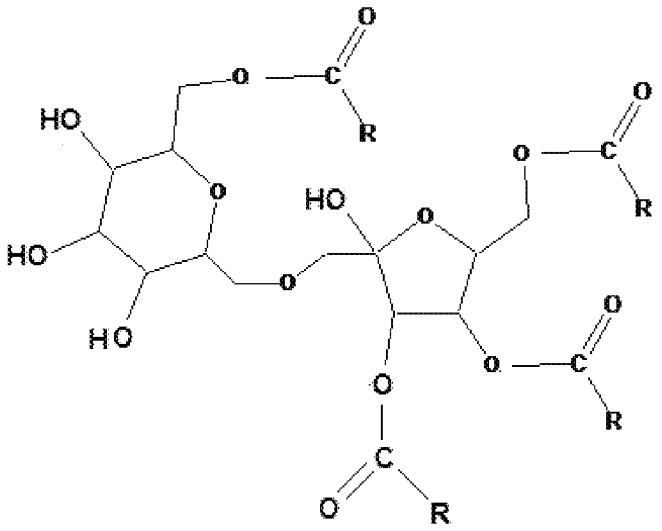
Mono-substituted



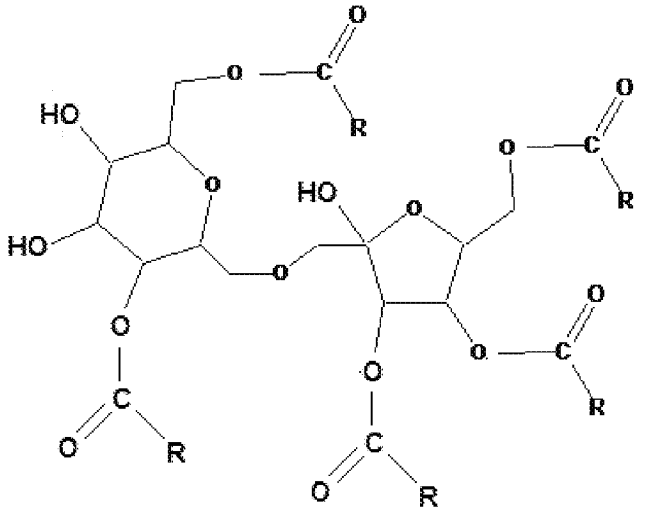
Di-substituted



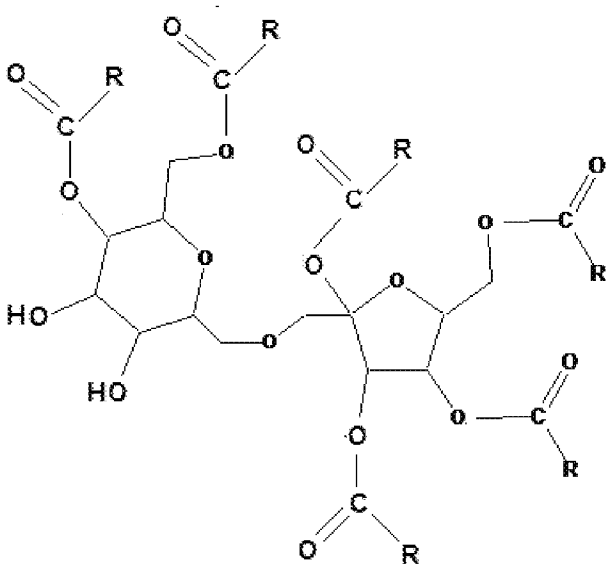
Tri-substituted



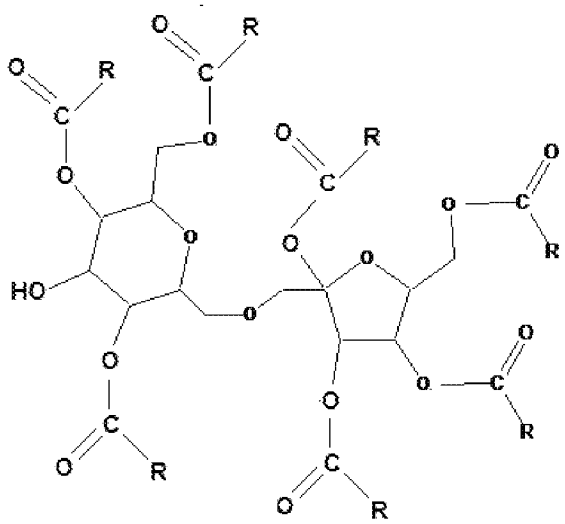
Tetra-substituted



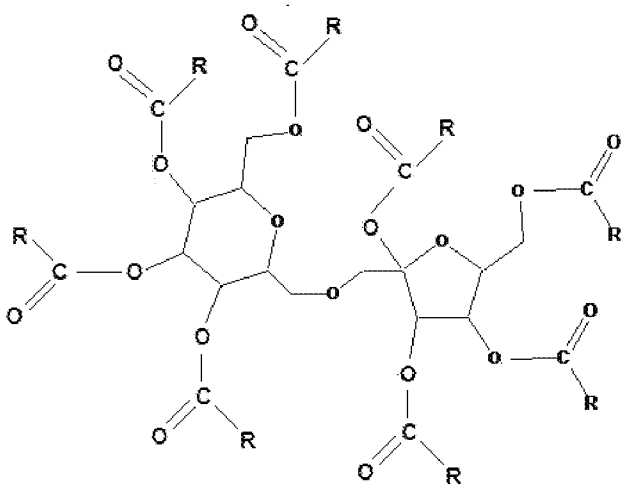
Penta-substituted



Hexa-substituted



Hepta-substituted



Octa-substituted

Therefore, if the claims were not further limited, any combination of the nine sub-generic compounds would satisfy the requirement of providing an extrudable mass. Importantly, however, claims 1 and 67 each include an important limitation on the nature of the compounds included in the extrudable mass. Each claim is specifically limited to extrudable masses **"wherein all of the "A" moieties of at least about 50 wt. % of the compounds of Formula I comprise moieties of Structure I."** In other words, at least 50 wt. % of the Formula I compounds in the extrudable mass provided according to the method of the claims must be octa-substituted.

B. The Law of Anticipation - Generally

Generally, a patent claim is anticipated only if each and every limitation of the claim is found in a single item of prior art. As noted by the Supreme Court over a century ago:

> Patented inventions cannot be superseded by the mere introduction of a foreign publication of the kind, though of prior date, unless the description and the drawings contain and exhibit a substantial representation of the patented improvement, in such full, clear and exact terms as to enable any person skilled in the art or science to which it appertains, to make, construct and practice the invention to the same practical extent as they would be enabled to do if the information was derived from a prior patent. Mere vague and general representations will not support such a defence, as the knowledge supposed to be derived from the publication must be sufficient to enable those skilled in the art or science to understand the nature and operation of the invention, and to carry it into practical use.

Seymour v. Osborne, 78 US 516, 555 (1870).

Furthermore, it is well settled that in order for an anticipation rejection to be proper, the single item of prior art cited by the Examiner must be such that a person of ordinary skill in the art would consider there to be no difference between the claimed invention and the reference disclosure. See *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F2d 1565 (Fed.Cir. 1991), and *In re Donohue*, 766 F2d 531 (Fed.Cir. 1991).

C. The Law of Anticipation - Inherency

Applicants acknowledge that anticipation does not necessarily require that each element of the claim is disclosed expressly in a single item of prior art. Rather, what is required is that "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co.,* 814 F.2d 628, 631(Fed.Cir.1987). However, a finding of inherency can only be based on extrinsic evidence which "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *In re Robertson*, 169 F.3d 743, 745 (Fed.Cir. 1999) (quoting *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed.Cir.1991)). "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Id.* (quoting *In re Oelrich*, 666 F.2d 578, 581 (C.C.P.A.1981)).

In order to support an anticipation rejection based on inherency, therefore, an examiner must provide factual and technical grounds establishing that the inherent feature *necessarily* flows from the teachings of the prior art. *See Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int. 1990); *see also In re Oelrich*, 666 F.2d 578, 581 (C.C.P.A. 1981) (holding that inherency must flow as a necessary conclusion from the prior art, not simply a possible one); *Toro Co. v. Deere & Co.*, 355 F.3d 1313, 1320 (Fed. Cir. 2004) ("the district court did not address a critical question for inherent anticipation: whether, as a matter of fact, practicing the '516 invention necessarily featured or resulting in limitation (c) of the '168 patent.").

It is well established that the disclosure of a genus, even a genus having a relatively small number of species, does not necessarily inherently disclose all species within the

genus. *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354, 1367 (Fed.Cir.2004) ("A prior art reference that discloses a genus still does not inherently disclose all species within that broad category."); *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1262 (Fed.Cir.1989) ("Under [defendant's] theory, a claim to a genus would inherently disclose all species. We find [this] argument wholly meritless...."); *In re Meyer*, 599 F.2d 1026 (C.C.P.A.1979) (declining to find that a disclosed genus anticipated a species because the "genus, 'alkaline chlorine or bromine solution,' does not identically disclose or describe ... the species alkali metal hypochlorite, since the genus would include an untold number of species."). It is true that in some circumstances, "a small genus **may** anticipate the species of that genus," *Bristol-Myers Squibb Co. v. Ben Venue Lab., Inc.*, 246 F.3d 1368, 1380 (Fed.Cir.2001) (emphasis added). However, this is not a statement of the proper analysis – it is just a statement of a possible outcome of a proper analysis.

In order to properly find that a genus inherently anticipates a species, a proper legal analysis requires an examination of a number of factors, including the number of species embraced by the genus, the closeness of their relation, and whether all the species can be "at once envisaged" by a person of ordinary skill in the art without having to speculate, combine disclosures not related to each other, or choose indiscriminately from possible combinations. *In re Ruschig*, 52 C.C.P.A. 1238, 343 F.2d 965, 974 (C.C.P.A.1965) (in a case involving 130 or more compounds, disapproving of "mechanistic dissection and recombination of the components of the specific illustrative compounds in every chemical reference containing them" and "hindsight anticipations"); *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354, 1367 (Fed.Cir.2004) (stating that "[a] prior art reference that discloses a genus still does not inherently disclose all species within that broad category," and finding of no anticipation where the prior art reference disclosed "no

more than a broad genus of potential applications of its discoveries" and that the genus simply invited investigation to discover other uses).

D. The Disclosure of an Extrudable Mass Containing a Saccharide Ester Does Not Anticipate A Claim Requiring That at least 50% of the Saccharide Esters in the Mass Are Octa-Substituted Saccharide Esters

The Examiner rejected the pending claims based on prior art which discloses only generically that saccharide esters can be used in an extrusion process. The Examiner reasoned that the disclosure of 50% by weight of octa-substituted esters is inherent in such a generic teaching and that therefore the claims are invalid under § 102(b). More specifically, the Examiner stated on page 4 of the Final Office Action mailed January 18, 2006, that "in view of the small number of ester species disclosed, the octa ester feature is inherently possessed by Kaneko et al."

It is clear that the Examiner has used the wrong legal standard for conducting the inherency analysis, and the use of this improper standard contributed to the legally erroneous rejection. The standard apparently applied by the Examiner is that a generic description of "saccharide ester" is an inherent description of all possible combinations of all saccharide esters. This is a clear violation of the principles of inherency as outlined above. As noted by the Federal Circuit:

> [F]or a prior art reference to anticipate a claim, the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art.... Although this disclosure requirement presupposes the knowledge of one skilled in the art of the claimed invention, that presumed knowledge does not grant a license to read into the prior art reference teachings that are not there.

Motorola, Inc. v. Interdigital Tech. Corp, 121 F3d 1461, 1473 . (Fed.Cir. 1997). In the present case, this is exactly what the Examiner has done – he has read into the Kaneko patent the teaching of a process in which the extrudable mass includes saccharide ester comprising at least 50% by weight of octa-substituted compounds. A reading of Kaneko

reveals that this teaching is simply not there.

The Examiner also based his rejection on the false premise that "a small number" of relevant species are involved in the generic teaching of the cited reference. This is simply wrong – the teaching of Kaneko encompasses literally an infinite number of relevant mixtures, as explained in Section 7.D.i below.

i. The Generic Composition Disclosed in Kaneko Encompasses an Infinite Number of Species Compositions

Kaneko discloses the use in a PVC extrusion process of a stabilizer composition. The stabilizer composition of Kaneko includes "at least one additive selected from the group consisting of (a) sucrose alkyl ester and (b) a semiester of an organic polybasic acid" (Abstract). It is acknowledged that the disclosure in Kaneko of "sucrose alkyl ester" in the composition is a disclosure of the broad genus of saccharide esters in accordance with Formula (I) in the claims. As illustrated above, Formula (I) encompasses nine sub-generic categories of compounds. However, as admitted by the Examiner, there is no disclosure of "'a mixture' of sucrose alkyl esters." Thus, the Kaneko disclosure encompasses every combination of these nine categories of compound in literally hundreds of thousands of different mixtures of sucrose alkyl esters. By way of example, the Table attached to the Reply filed on January 11, 2007 illustrates 100 mixtures encompassed by Kaneko, but not a single one of these compositions is actually disclosed in Kaneko.

It is clear, therefore, that the Examiner is wrong in his assertion that Kaneko discloses a relevant genus with only a small number of species. In this case the relevant genus is compositions containing sucrose alkyl esters, and it is clear that this genus includes literally hundreds of thousands of potential "species," that is, specific compositions having varying combinations of the nine possible esters in widely varying amounts.

ii. The Claims are Not Anticipated by the Kaneko Compositions

The Examiner does not dispute that Kaneko lacks an express teaching of the presently claimed invention. On page 5 of the Final Rejection mailed April 4, 2007 in response to Applicants' RCE, the Examiner acknowledges that "Kaneko et al. are silent on 'a mixture' of sucrose alkyl esters or a 'partially esterified' sucrose ester." The Examiner admits, therefore, that there is no anticipation by an express teaching.

The Examiner has attempted to overcome this deficiency in Kaneko by making the unsupported statement that he "has a reasonable basis to interpret the recited 'sucrose alkyl esters' to mean 'a sucrose akyl ester' that has been fully esterified (100 wt% octa-substituted)." (Office Action of April 4, 2007, pages 5 and 6). Simply put, the Examiner argues that Kaneko not only inherently teaches octa substituted saccharides, but that Kaneko also inherently teaches that at least about 50 wt % of the saccharides in the composition are octa-substituted. Applicants respectfully submit that the Examiner's position is without merit.

The only disclosure in Kaneko regarding sucrose alkyl ester substitution is that such compounds:

> include mono-esters or diesters of fatty acids having an alkyl group with 12 to 18 carbon atoms and mixtures thereof. As the sucrose alkyl ester, there are exemplified sucrose myristyl ester, sucrose stearyl ester and the like. (Col. 4, lines 46-53)

This very statement negates the Examiner's inherency argument. This passage of Kaneko describes compositions outside the scope of the present claims; compositions within the the scope of the claims can not therefore be inherent in the generic teaching. As established above, an inherent disclosure only exists where the recited claim feature is **necessarily present** when the teaching of the cited reference is followed. Since Kaneko

expressly teaches a composition which consists of mono- and/or di-substituted compounds, it is not possible for this disclosure to *necessarily* create a composition in which about 50 wt % of the saccharides in the composition are octa-substituted. Inherency is therefore not possible. *See Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int. 1990).

The decision of the CCPA in *In Re Application of Katzschman*, 347 F.2d 620 (1965) is instructive in this regard. In *Katzcschman*, the CCPA considered the patentability of claims directed to a process for the production of esters of phthalic acids from mixtures of xylenes (meta- or para-) and esters of toluic acids. The invention was based on the discovery that advantages were achieved in the process when the starting material comprised, inter alia, a mixture of xylenes in a concentration of "at least 98.5%." *Id.* In rejecting the claims, the examiner and the Board relied upon the disclosure in a Canadian patent "in which 96% p-xylene is used." *Id.* In overturning the rejection, the CCPA held:

> We find no teaching in the Canadian patent that the use of either p-xylene or m-xylene in concentration of 98.5% and above would be expected to improve the results of the disclosed process.

Id.

Although the holding of the CCPA in *Katzcschman* was made in the context of an obviousness rejection, it is certainly instructive to the present case respecting the issue of anticipation, especially since it is well settled that anticipation is the epitome of obviousness. In *Katzcshman*, the claimed invention was directed to a mixture which included a possible combination of components comprising meta- or para-xylenes and one other component, namely, esters of toluic acids. The claim required the presence of at least 98.5% of meta- or para-xylenes in such mixture. The prior art in *Katzcschman* disclosed the use of xylenes in an amount of 96%. Thus, the prior art in *Katzcschman* was

much closer to an inherent disclosure of the invention than Kaneko is in the present case. In the present case, Kankeo does not even mention octa-substituted compounds, much less the presence of such compounds in any specific concentration in the mixture. Yet, the CCPA clearly recognized that a disclosure of a mixture of 96% xylenes does not inherently disclose a mixture of at least 98.5% xylenes. It is so much clearer in the present case that a disclosure which does not even mention octa-substituted compounds can not anticipate a claim which requires a minimum concentration of such compounds. Accordingly, the Examiner's rejection on this ground is clearly wrong and should be reversed.

E. The Kaneko Patent, When Taken as a Whole, Does Not Teach or Suggest a Process Requiring an Extrudable Mass According to the Claims

The Examiner has rejected the present claims only on the grounds of anticipation. As is made abundantly clear, the Examiner's rejection is improper on this ground. Although the Examiner did not reject the claims on the grounds of obviousness, applicants respectfully submit that the claims on appeal are also non-obvious over the cited prior art and therefore should be allowed, as explained in detail below.

Applicants have unexpectedly discovered that the relative amount of highly substituted compounds which make up the compounds of Formula I of the present invention can have a significant beneficial effect on the processing characteristics of the extrudable mass and therefore on the present extrusion methods. In particular, applicants have discovered that compositions in which at least 50% by weight of such compounds are octa-substituted compounds in accordance with the present claims demonstrate an unexpectedly superior dynamic stability value and an unexpectedly superior dynamic heat

stability performance relative to those results achieved with compounds analogous to those described in Kaneko, as explained below.

As noted above, Kaneko and Mitsubishi do not disclose the use of octa-ester substituted compounds in accordance with the present claims. Kaneko itself does not contain any suggestion or motivation to modify the composition disclosed therein or to combine the same with any other reference to produce the instantly claimed process. In fact, Kaneko teaches away from the use of octa-ester substituted sugars in an extrusion process by exemplifying and claiming only mono and di-ester substituted sugars. Again, the only mention in Kaneko expressly addressing the issue of ester substitution for the sucrose alkyl ester appears at column 4, lines 46-50, which disclosed mono- and di-substituted esters only.

Applicants have discovered, as described extensively in the present specification, that the degree of ester substitution can have an important impact on the properties of the extrusion processes which use such a composition. In fact, as demonstrated below with reference to the Declarations of one of the co-inventors, the use of such a high percentage of octa-substituted saccharide esters produces results which are dramatically and unexpectedly superior to the results achieved with a saccharide esters which have less than such a concentration and are more analogous to those described in the Kaneko patent.

By way of example, but not necessarily by way of limitation, compositions in accordance with the present invention produce superior results in connection with the stability time of such compositions. More particularly, as demonstrated and explained in the Second Durrenberger Declaration, Mr. Durrenberger tested and/or supervised the testing of a composition believed to be representative of the material of the type described in the first row of the Mitsubishi publication (HLB = 1). The material was obtained from Mitsubishi under the Mitsubishi trade designation "SS 170." The results of testing on this

material are presented in Table 1 below as Sample S 170. The first composition (Sample A) was made in accordance with the methods as now claimed in the present application.[1] The results of these tests are reported in Table 1 below.

Table 1

Parameter	Test Sample A	Test Sample S 170
Estimated HLB	<<1	1
Degree of Substitution	At least 70 wt.% Octa	Estimated approximately 10% octa-substituted, 90% of substitution hepta or lower
Equilibrium Temp (°C)	212	215
Fusion Torque (mg)	3,370	3,500
Equilibrium Torque (mg)	1,860	1,904
Fusion Time (min)	47.5	42
Dynamic Stability time, min.*	13:28	9:33

*elapsed time between fusion and measurable onset of cross-linking

The results of this test work illustrate one of the important benefits of applicants' invention. More particularly, among other benefits, applicants have discovered that the degree of substitution of the saccharide ester in accordance with the present invention has a significant beneficial effect on the processing characteristics of the shapeable composition and therefore on the present extrusion methods. By way of example, and as

mentioned above, the dynamic stability of a shapeable composition can be an important measure of the ability of the composition to undergo processing without disadvantageous degradation and cross-linking. As reported in the above table, the compositions in accordance with the present invention demonstrate a dramatically superior dynamic stability value compared to Sample S 170.[2] More specifically, the compositions of the present invention demonstrate a dynamic heat stability performance (13:28 min) which is 42 relative percent greater than the dynamic heat stability performance of sample S 170 (9:33 min). Applicants respectfully submit that this is a dramatic and highly desirable result. Furthermore, this result is not in any way suggested or contemplated by the prior art. (see First Durrenberger Declaration and Second Durrenberger Declaration).

Kaneko fails to teach or suggest particular combinations of substituted sucrose esters. Kanko does not recognize the need for extrusion compositions having better general stability or heat stability values, nor does it provide any suggestion that extrudable compositions containing a high percentage of octa-substituted saccharide esters in accordance with the present invention demonstrate unexpectedly superior dynamic stability value and an unexpectedly superior dynamic heat stability performance, as demonstrated by the Declarations cited above. Accordingly, Kaneko contains no teaching or suggestion that would motivate one of ordinary skill in the art, at the time of the present invention, to produce the presently claimed invention with the expectation of achieving the unexpected results of the presently claimed invention. Accordingly, the presently claimed invention is patentable over Kaneko.

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[2] Applicants do not concede that a material in accordance with Sample 170 is actually prior art to the present invention. Nevertheless, for the purposes of comparison, even such a composition, which may be closer to the present invention than any actual item of prior art, does not demonstrate the advantageous and desirable properties of the present invention.

8. CONCLUSION

For at least the reasons set forth above, applicants respectfully request this Board to overrule the Examiner's rejection and to allow the pending claims.

Respectfully submitted,

Dated: December 19, 2007

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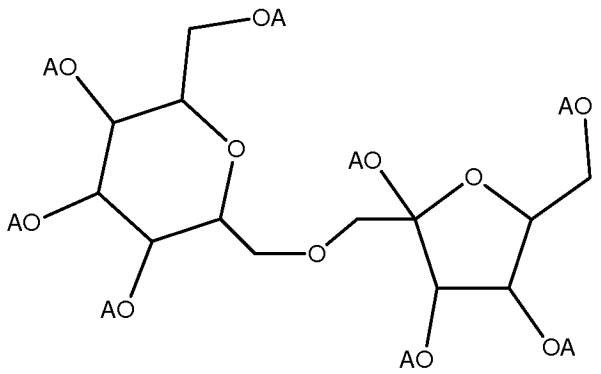
CLAIMS APPENDIX CLAIMS INVOLVED IN THIS APPEAL:

1. A process for extruding a resin-containing composition comprising:

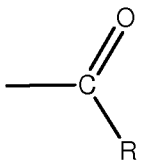
a) providing an extrudable mass comprising at least one extrudable resin and at least one saccharide ester of Formula I:

Formula I



wherein each "A" is independently hydrogen or has the structure of Structure I:

Structure I



wherein each "R" is independently an aliphatic or aromatic moiety of about eight to about 40 carbon atoms, and wherein all of the "A" moieties of at least about 50 wt. % of the compounds of Formula I comprise moieties of Structure I; and

b) extruding said extrudable mass to produce an extrudate.

2. The process of claim 1 wherein said saccharide ester is present in an amount effective to improve the extrudability of said extrudable mass relative to the extrudability of the extrudable mass in the absence of said saccharide ester.
3. The process of claim 1 wherein said saccharide ester is present in an amount effective to improve the extrudability of said extrudable mass by at least about 10 percent relative to the extrudability of said extrudable mass in the absence of said saccharide ester.
4. The process of claim 1 wherein said step of extruding produces an extruder head

pressure and wherein saccharide ester is present in an amount effective to reduce said extruder head pressure relative to use of the same composition without said saccharide ester.

5. The process of claim 1 wherein said step of extruding produces an extruder head pressure and wherein saccharide ester is present in an amount effective to reduce said extruder head pressure by at least about 10 percent relative to use of the same composition without said saccharide ester.
6. The process of claim 1 wherein said step of extruding produces an extruder torque and wherein saccharide ester is present in an amount effective to reduce the required extruder torque relative to use of the same composition without said saccharide ester.
7. The process of claim 1 wherein said step of extruding produces an extruder torque and wherein saccharide ester is present in an amount effective to reduce the required extruder torque by at least about 10 percent relative to use of the same composition without said saccharide ester.
8. The process of claim 1 wherein said saccharide ester is present in an amount effective to increase extrudate gloss relative to the use of said composition without said saccharide ester.
9. The process of claim 1 wherein said saccharide ester is present in an amount effective to increase extrudate gloss by at least about 10 percent relative to the use of said composition without said saccharide ester.
10. The process of claim 4 wherein said saccharide ester is present in an amount effective to reduce said extruder head pressure by at least about 10 percent relative to use of the same composition without said saccharide ester and wherein the extrudate gloss is not substantially reduced relative to the use of said composition without said saccharide ester.
11. The process of claim 6 wherein said saccharide ester is present in an amount effective to reduce said extruder torque by at least about 10 percent relative to use of the same composition without said saccharide ester and wherein the extrudate gloss is not substantially reduced relative to the use of said composition without said saccharide ester.
12. The process of claim 4 wherein said saccharide ester is present in an amount effective to reduce said extruder head pressure by at least about 10 percent relative to use of the same composition without said saccharide ester and wherein the dimensional stability

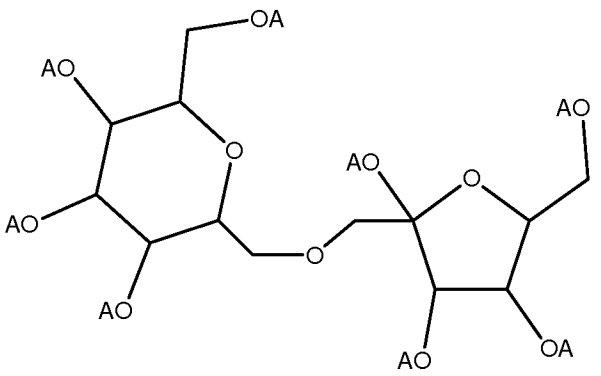
of said extrudate is not substantially reduced relative to the use of said composition without said saccharide ester.

13. The process of claim 6 wherein said saccharide ester is present in an amount effective to reduce said extruder torque by at least about 10 percent relative to use of the same composition without said saccharide ester and wherein the dimensional stability of said extrudate is not substantially reduced relative to the use of said composition without said saccharide ester.
14. The process of claim 1 wherein said saccharide ester is present in an amount effective to increase dynamic heat stability of the extrudable mass relative to said mass in the absence of said saccharide ester.
15. The process of claim 1 wherein said saccharide ester comprises one or more compounds in which of Formula I.

    Formula I wherein each "R" is an aliphatic moiety of about eight to about 40 carbon atoms.
16. The process of claim 1 wherein all of the "A" moieties of at least about 70 wt. % of the saccharide ester compounds of Formula I comprise moieties of Structure I.
17. The process of claim 16, wherein substantially each "R" moiety of Structure I is a stearyl moiety.
18. The process of claim 1 wherein the amount of saccharide ester present in said extrudable composition is from about 0.01 PHR to about 2 PHR.
67. A process for extruding a composition comprising:

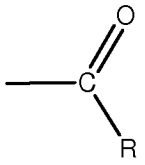
    providing an extrudable composition comprising an extrudable resin, at least one saccharide ester, and at least one additional constituent selected from the group consisting of supplemental lubricants, supplemental heat stabilizers and combinations of these, said at least one saccharide ester being at least one compound of Formula I:

    Formula I



wherein each "A" is independently hydrogen or has the structure of Structure I:

Structure I



wherein each "R" is independently an aliphatic or aromatic moiety of about eight to about 40 carbon atoms, and wherein all of the "A" moieties of at least about 50 wt. % of the compounds of Formula I comprise moieties of Structure I; and extruding the extrudable composition to produce an extrudate.

71. The process of claim 1 wherein said extrudable resin comprises polyvinyl chloride resin.

72. The process of claim 1 wherein all of the "A" moieties of substantially all of said saccharide ester compounds of Formula I comprise moieties of Structure I.

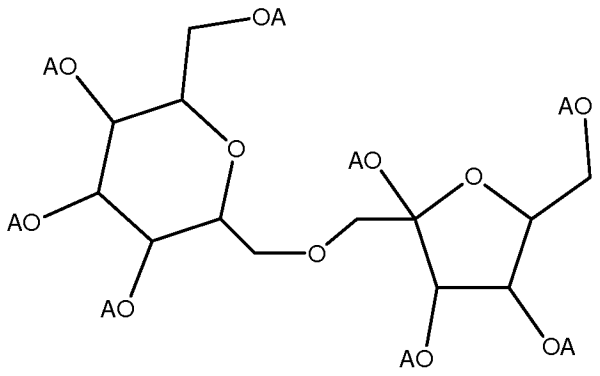
73. The process of claim 1 wherein the amount of saccharide ester present in said extrudable composition is from about 0.05 PHR to about 0.9 PHR.

74. The process of claim 1 wherein the amount of saccharide ester present in said extrudable composition is from about 0.1 PHR to about 0.8 PHR.

75. The process of claim 1 wherein the amount of saccharide ester present in said extrudable composition is from about 0.1 PHR to about 0.4 PHR.

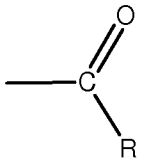
76. The process of claim 1 wherein said saccharide ester compound comprises one or more compounds of Formula I.

Formula I:



wherein each "A" is independently hydrogen or has the structure of Structure I:

Structure I



wherein substantially each "R" is an aliphatic moiety of about 12 to about 26 carbon atoms.

77. The process of claim 76 wherein said composition comprises saccharide ester in an amount of from about 0.01 PHR to about 2 PHR.

78. The process of claim 76 wherein said composition comprises saccharide ester in an amount of from about 0.1 PHR to about 0.4 PHR.

79. The process of claim 76 wherein said saccharide ester comprises sucrose soyate.

80. The process of claim 76 wherein said saccharide ester comprises sucrose behenate.

81. The process of claim 76 wherein the saccharide ester is selected from the group consisting of sucrose stearate, sucrose soyate, sucrose behenate and combinations of these.

82. The process of claim 72 wherein said composition further comprising calcium stearate.

83. The process of claim 67 wherein said composition further comprises a mixture of calcium hydroxide and stearic acid present in a ratio of from about 1:6 to about 1:10.

84. The process of claim 67 wherein said additional constituent comprises at least one lubricant selected from the group consisting of paraffin wax lubricants and oxidized polyethylene lubricants and said saccharide ester is present in an amount of from about 1 wt. % to about 99 wt. % of the additive composition.

85. The process of claim 67 wherein said additional constituent comprises at least one member selected from the group consisting of tin-based heat stabilizers, organic-based heat stabilizers, heavy metal-based heat stabilizers and mixed metal-based heat stabilizers, and wherein said saccharide ester is present in an amount of from about 1 wt. % to about 99 wt. % of the total of said additives.

EVIDENCE APPENDIX

No additional evidence presented.

RELATED PROCEEDINGS INDEX

There is no related proceeding.